



2017-18

6.2 Circular Functions & Linear Velocity

Name _____ Date _____ Period _____

Find the measure of two angles, one positive and one negative, that are coterminal with the given angle.

1. 60°

2. 30°

3. -45°

4. 90°

5. $\frac{\pi}{3}$

6. $-\frac{\pi}{4}$

For the given angle, name the quadrant in which the terminal side lies.

7. 85°

8. -125°

9. -740°

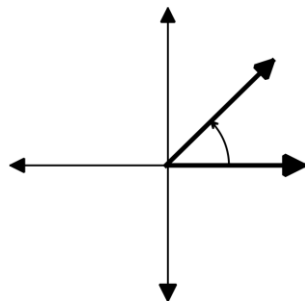
Find the angle of smallest angle possible positive measure that is coterminal with the given angle.

10. 400°

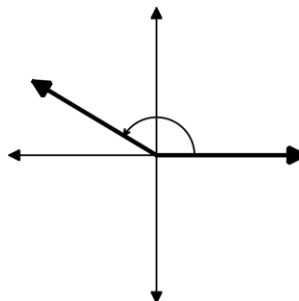
11. -340°

Given the following choices, determine that degree and radian measure of the given angle.

12.



13.



A) 120°

B) 45°

A) 120°

B) 30°

C) 60°

D) 135°

C) 60°

D) 150°

Find the product. Be sure to indicate the units for the answer. Round approximate answers to the nearest tenth.

14. $\frac{4 \text{ rev}}{1 \text{ sec}} \cdot \frac{2\pi \text{ rad}}{1 \text{ rev}}$

15. $\frac{55 \text{ rev}}{1 \text{ min}} \cdot \frac{6\pi \text{ ft}}{1 \text{ rev}}$

16. $\frac{10 \text{ rad}}{1 \text{ min}} \cdot \frac{1 \text{ rev}}{2\pi \text{ rad}} \cdot \frac{60 \text{ min}}{1 \text{ hr}}$

Perform each conversion. Round approximate answers to the nearest tenth.

17. $30 \text{ rev/min} = \underline{\hspace{2cm}} \text{ rad/min}$

18. $180 \text{ rev/sec} = \underline{\hspace{2cm}} \text{ rad/hr}$

A windmill for generating electricity has a blade that is 30 feet long. Depending on the wind, it rotates at various velocities. In each case, find the angular velocity in rad/sec (to the nearest tenth) for the tip of the blade. Use 30 days/month.

19. 500 rev/sec

20. $50,000 \text{ rev/day}$

21. $999,000 \text{ rev/mo}$

A common speed for an electric motor is 3450 revolutions per minute. Saw blades of various diameters can be attached to such a motor. Determine linear velocity in mph for a point on the edge of the blade with each given diameter.

22. 6 in

23. 10 in

24. 16 in

Solve. Be sure to indicate the units for the answer. Round approximate answers to the nearest tenth.

25. Express the angular velocity of 900 rad/sec in rev/sec .

26. A pulley of radius 7 cm rotates 15 times in 128 sec. Find the angular velocity of the pulley.

27. A wheel with a 22-inch diameter is turning at the rate of 46 revolutions per minute. What is the linear velocity of a point on the rim?

28. A satellite in a circular orbit 879.4 mi above the earth makes one complete orbit every 83.42 min. What is the linear velocity? Use 3963 mi for the length of the radius of the earth.

Review

29. Convert 225° to radians

30. Convert $\frac{7\pi}{6}$ to degrees.